"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

82828

S/048/60/024/008/005/017
B012/B067

24.6200

AUTHORS: Zapesochnyy, I. P., Kishko, S. M.

TITLE: On the Excitation Curves of Nitrogen and Carbon Monoxide Molecules in the Collision With Electrons

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 8, pp. 953-955

TEXT: The excitation curves of bands of the diatomic molecules, i.e., the dependence of the intensity of the bands on the energy of the exciting electrons have hitherto been little investigated. In his paper (Ref. 2) I. P. Zapesochnyy established that the actual shape of the optical excitation curves can be obtained only when repeated collisions, impacts of second type, and step-by-step excitations do not occur and when the beam of the incident electrons is sufficiently monochromatic. Under such conditions the experiments described here for measuring the excitation curves of bands of ordinary N_2 and CO-molecules are made in the visible range. The intensities were photoelectrically

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82828

On the Excitation Curves of Nitrogen and Carbon Monoxide Molecules in the Collision With Electrons

S/048/60/024/008/005/017
B012/B067

recorded. Experimental arrangement and measuring method were described in Ref. 3; here, only the results of the experiments are given. Fig. 1 shows the excitation curves of the bands 0→3, 1→4, 2→6 of the second positive system of N_2, Fig. 2 shows the bands 0→0 and 1→1 of the Ångstroem system of Co, and Fig. 3 shows the excitation curves of the bands of N_2 (0→3) in a relatively wide range of the electron velocities (up to 200 ev). In conclusion, it is established that in the spectral bands of ordinary N_2 and CO molecules no marked secondary maxima could be observed, although the relative intensities were measured with an accuracy of 2-5%. On the other hand, the excitation curves of the bands of ions of these molecules show a fine structure, i.e., they have strongly marked maxima (Ref. 5). There are 3 figures and 5 references: 4 Soviet and 1 British.

ASSOCIATION: Kafedra optiki Uzhgorodskogo gos. universiteta (Chair of Optics of the Uzhgorod State University)

Card 2/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPESOCHNYY, I.P.; KISHKO, S.M.

Complex structure of the functions of excitation bands for the molecular ions H_2^+, CO^+, and NO^+. Dokl.AN SSSR 134 no.2: 311-313 S '60. (MIRA 13:9)

1. Uzhgorodskiy gosudarstvennyy universitet. Predstavleno akad. A.N.Terenin'ym.

(Ions--Spectra)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

24.3300

S/058/62/000/006/044/136
A061/A101

AUTHORS: Zhukov, I. G., Zapesochnyy, I. P.

TITLE: A monochromator for the study of optical excitation functions in the vacuum ultraviolet

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 8, abstract 6G62 ("Dokl. i soobshch. Uzhgorodsk. un-t Ser. fiz.-matem. n.", 1961, no. 4, 41 - 43)

TEXT: A vacuum monochromator with concave 1-m grating of 600 lines per mm in the 4,500 - 800 Å range and with a linear dispersion of 16.3 Å/mm has been built. Schematic diagrams and a description of the design are given.

[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

S/058/62/000/006/028/136
A061/A101

AUTHORS: Fel'tsan, P. V., Zapesochnyy, I. P.

TITLE: On the excitation functions of neon lines in the visible spectrum region

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 16, abstract 6V100 ("Dokl. i soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem. n.", 1961, no. 4, 44 - 45)

TEXT: Photoelectric measurements of the excitation functions of Ne lines at 4,290 Å ($3d^4F_5$-$4f^4G_6$), 5,401 Å ($2p^53s^3P_1$-$2p^53p^3P_0$), and 5,852 Å ($3s^1P_1$-$3p^3P_0$) have been conducted at low current densities and pressures of 10^{-3} - 10^{-2} mm Hg. The velocity spread of electrons in the presence of the gas investigated was 0.9 ev. The general course of the curve of the excitation function with a maximum at 45 v was similar to that obtained by Hanle (Hanle, W., "Z. Phys.", 1930, v. 65, 512). However, in addition to the principal maximum, two more were established at 22 and 26 v, which were smoothed out with an increase of pressure and current density.

[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

24.6160

S/058/62/000/006/027/136
A061/A101

AUTHORS: Shimon, L. L., Zapesochnyy, I. P.

TITLE: A photoelectric study of the excitation function of the sodium resonance doublet

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 16, abstract 6V98 ("Dokl. i soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem. n.", 1961, no. 4, 46 - 48)

TEXT: Results of the measurement of the excitation function of the Na resonance doublet, conducted under clearer conditions of excitation (lower vapor pressures P and current density j) than those of previous investigations, are presented. The measurement conditions were as follows: $P = 2 \div 10 \cdot 10^{-4}$ mm Hg, $j = 0.3 \div 0.5$ ma/cm^2, velocity spread of electrons $\Delta V = 0.6 \div 0.7$ v. Four steps at 3.6; 4.1; 5.0, and 5.5 v were established on the ascending part of the curve. This points to the existence of a fine structure for the excitation function of Na. On an increase of pressure, the curve maximum at $4 \cdot 10^{-4}$ mm Hg and ~15 v shifted toward low potentials in some contradiction with Haft's (Z. Phys., 1933, v. 82, 73) findings.
[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

S/058/62/000/006/026/136
A061/A101

AUTHORS: Shevera, V. S., Zapesochnyy, I. P.

TITLE: Photoelectric measurement of the excitation functions of cadmium atoms in the ultraviolet

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 16, abstract 6V97 ("Dokl. i soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem. n.", 1961, no. 4, 49 - 51)

TEXT: Measurements of the optical excitation functions of Cd atoms have been extended to the ultraviolet region of the spectrum (see RZhFiz, 1961, 9V55). The relative course of the excitation functions of the first resonance line at 3,261 Å and of three primary lines of the diffuse series $5^3D_J - 5^3P_J$ is measured in the accelerating potential range of 4 - 30 v. The pressure p is $1.2 \div 4.4 \cdot 10^{-3}$ mm Hg, the density, i, of the exciting electron current is $1 \cdot 10^{-4}$ to $2 \cdot 10^{-3}$ a/cm^2, the velocity spread of the electrons is 0.8 ev for the line at 3,261 Å, and 1.5 ev for the lines of the diffuse series. Most of the measured curves of the excitation functions of singlet and triplet Cd lines in the visible

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CIA-RDP86-00513R001963810011

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPESOCHNYY, I.P. [Zapisochnyi, I.P.]; KISHKO, S.M. [Kyshko, S.M.]; SHEVERA, V.S.; FEL'TSAN, P.V.; SHIMON, L.L.

Spectroscopic study of the excitation functions of atoms and molecules. Ukr.fiz.zhur. 6 no.6:770-774 N-D '61. (MIRA 16:5)

1. Uzhgorodskiy gosudarstvennyy universitet.
(Spectrum, Atomic) (Molecular spectra)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

S/051/61/011/005/014/018
E202/E192

AUTHORS: Zapesochnyy, I.P., and Dashchenko, A.I.

TITLE: Oscillographic method of studying the optical functions of excitation

PERIODICAL: Optika i spektroskopiya, v.11, no.5, 1961, 679-681

TEXT: An experimental assembly used in the measurement of optical functions of excitation was briefly described. The use of oscillograph was preferred since it secured instantaneous pictures of the function at any velocity interval of the exciting electrons. Furthermore, with this arrangement it was possible to isolate any narrow portion of the curve and spread it on the screen, so as to render the fine details visible. Finally, the whole progress of work could be well documented by taking photographs. Detailed descriptions of the discharge tube, monochromator and the registering arrangement were given by the first of the present authors (Ref.3: Vestn. LGU, no.11, 67, 1954). The excitation functions were presented on the CRT as follows. To the adjustable anode of the electron gun was applied the alternating voltage of a sawtooth wave generator which led to

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPESOCHNYY, I.P.; SHEVERA, V.S.

Fine structure of the excitation functions of certain cadmium lines. Dokl. AN SSSR 141 no.3:595-598 N '61. (MIRA 14:11)

1. Uzhgorodskiy gosudarstvennyy universitet. Predstavleno akademikom A.N. Tereninym.

(Cadmium--Spectra)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 16155-63 BDS/EWP(q)/EWT(m) AFFTC/ASD JD

ACCESSION NR: AR3005151 S/0058/63/000/006/D020/D021

SOURCE: RZh. Fizika, Abs. 6 D120

AUTHORS: Fel'tsan P. V.; Zapesochnyy, I. P.; Skubenich, V. V. 56

TITLE: Further study of the excitation functions of helium

CITED SOURCE: Dokl. i soobshch. Uzhgorodsk. un-t, Ser. fiz.-matem. i istor. n., no. 5, 1962, 38-40

TOPIC TAGS: helium, fine structure, excitation functions, ortho-helium, para-helium, pressure dependence

TRANSLATION: The excitation functions were measured for the following He lines (in Angstroms): 5047(2'P--4'S), 4438 (2'P--5'S), 4169(2'P--6'S), 4321(2'P--4'D), 4387 (2'P--5'D), 4143 (2'P--6'D), 4009 (2'P--7'D), 5016 (2'S--3'P), 3964 (2'S--4'P), 5875 (2^3P--3^3D), 4471 (2^3P--4^3D), 4713(2^3P--4^3S), 3888(2^3S--2^3P). The additional maxima for the para- and ortho-helium lines were clarified. For the 5016 and 4888 A lines, the excitation functions were measured for different pressures of the investigated gas (3×10^{-4}-- 5×10^{-2} mm Hg). It is established

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 16155-63

ACCESSION NR: AR3015151

that the pressure influences appreciably the change in the intensity at pressure above 5×10^{-3} mm Hg. A shift of the maxima of the excitation-function curves i observed for these lines.

DATE ACQ: 15Jul63

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 16154-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD/JG

ACCESSION NR: AR3005150 S/0058/63/000/006/D019/D019

SOURCE: RZh. Fizika, Abs. 6 D119

AUTHORS: Zapesochnyy, I. P.; Shevera, V. S.

TITLE: Excitation functions of the subordinate series of cadmium and mercury

CITED SOURCE: Dokl. i soobshch. Uzhgorodsk. un-t, Ser. fiz.-matem. i istor. n., no. 5, 1962, 43-44

TOPIC TAGS: cadmium, mercury, fine structure, excitation function, singlet system, triplet system

TRANSLATION: It is established that there are no essential differences in the courses of the excitation functions of the triplet and singlet systems for the Hg and Cd atoms, with the exception of the excitation functions in the ^3D_j for Hg. A detailed investigation of the fine structure has shown that the relative placement of the maxima near the excitation potential for Hg is not identical with that observed for the singlet system of Cd. It is established that in spite of the different course of the excitation functions of the Hg lines from the ^3D_j state, the number of the fine-structure maxima and the potentials at which they

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L 16154-63

ACCESSION NR: AR3005150

appear coincide, within the limits of experimental error. It is concluded that the fine structure on the Hg and Cd excitation-function curves has the same origin.

DATE ACQ: 15Jul63 SUB CODE: PH ENCL: 00

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 16156-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD
ACCESSION NR: AR3005152 S/0058/63/000/006/D020/D020

55

SOURCE: RZh. Fizika, Abs. 6 D121

AUTHORS: Shimon, L. L.; Zapesochnyy, I. P.

TITLE: Excitation functions of certain lines of cesium 27

CITED SOURCE: Dokl. i soobshch. Uzhgorodsk. un-t, Ser. fiz.-matem. i istor. n., no. 5, 1962, 44-46

TOPIC TAGS: cesium, excitation function, fine structure

TRANSLATION: The course of the excitation-curves for individual components of cesium line groups is studied at a pressure 4.2×10^{-4} mm Hg. The excitation-function curves of the principal-series doublet 4555 and 4593 A are very close, as are also the curves of the excitation functions of the sixth term of the diffuse series 5466 ($2^2P_{1/2}$--$8^2D_{3/2}$) and 5635 A ($2^2P_{3/2}$--$8^2D_{5/2}$). The excitation functions of the higher terms of the different series are very similar to one another. The resonance line has a very broad maximum, the other lines have a narrower one.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 16157-63 EWT(1)/BDS/EEC(b)-2/ES(w)-2 AFFTC/ASD/ESD-3/IJP(C)/SSD Pab-4

ACCESSION NR: AR3005213 S/0058/63/000/006/D020/D020

SOURCE: RZh. Fizika, Abs. 6 D122

67

AUTHORS: Shpenik, O. B.; Shevera, V. S.; Zapesochnyĭ, I. P.

TITLE: Measurement of the optical excitation functions by the method of quasimonochromatization of an electron beam

CITED COURSE: Dokl. i soobshch. Uzhgorodsk. un-t, Ser. fiz.-matem. i istor. n., no. 5, 1962, 49-52

TOPIC TAGS: zinc, mercury, cadmium, fine structure, excitation function

TRANSLATION: The optical excitation functions of zinc were measured at a vapor pressure 1×10^{-3} mm Hg by the method of quasi-monochromatization of an electron beam. A fine structure (5 maxima) has been observed on the excitation-function curve of the visible 4811 A zinc triplet. A similarity is noted in the relative placement of the maxima for Zn, Hg, and Cd. A suggestion is advanced that the fine structure of the excitation functions of these three elements have the same origin.

Date Acq: 15Jul63 SUB CODE: PH ENCL: 00

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

S/051/62/013/005/001/017
E032/E314

AUTHORS: Zapesochnyy, I.P. and Shimon, L.L.

TITLE: A study of the optical excitation functions of sodium by the photoelectric method

PERIODICAL: Optika i spektroskopiya, v. 13, no. 5, 1962, 621 - 625

TEXT: It is noted that the excitation functions of alkali metals have not been extensively investigated. It has been shown in a previous paper (I.P. Zapesochnyy, Vestn. LGU, no. 11, 67, 1954) that it is necessary to use low pressures and low current densities to reduce to a minimum the distortion of the excitation curve by extraneous effects. The aim of the present work was to investigate the optical excitation functions of sodium by the photoelectric method in the visible part of the spectrum, with particular attention to the resonance doublet of sodium. Preliminary results have been briefly reported elsewhere (Dok. i soobshch. Uzhgorodskogo un-ta, ser. fiz.-mat. nauk, no. 4, 46, 1961) by the present authors. The method and apparatus employed were largely similar to those described in the first reference mentioned above.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

A study of S/051/62/013/005/001/017
E032/E314

The excitation chamber was made of molybdenum glass and was heated electrically to obtain the necessary vapour pressure of sodium. The spectral lines were recorded by the ФЭУ-17 (FEU-17) photomultiplier and the УМ-2 (UM-2) monochromator was used as the spectral instrument. Preliminary experiments showed that the oxide-coated cathode, used to produce the electron beam, operated satisfactorily only when the sodium vapours were exceedingly pure and this was achieved by multiple vacuum distillation. Examination of the excitation function for the resonance lines 5890/5896 Å of sodium showed that they had a very flat maximum between 8 and 15 V. It was found that the present results were somewhat different from the experimental data of Haft (Zs.Phys., 82, 73, 1933) and quite different from the theoretical points of Vel'dre (Vestnik AN Latv. SSR, no. 5, 106, 1956). Fig. 2 shows the initial part of the excitation curve for the above resonance line. This part of the curve was examined very carefully, using a mono energetic beam in which 90% of the electrons had a velocity spread of not more than 0.6 eV (indicated by the volt.-amp. characteristic of the beam and its differential curve

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shown in Fig. 2 below the resonance curve). As can be seen, this part of the resonance curve has a fine structure: there are definite breaks in the curve at 2.9, 4, 4.9 and 5.4 eV. More mono energetic beams will be necessary to resolve this fine structure. Next, a study was made of the effect of pressure and the electron current density on the form of the excitation function for the above doublet. It was found that points obtained at 2.5×10^{-4} and 5×10^{-4} mm Hg lay on the same curve but points obtained at 10^{-3} mm Hg fell on a different curve. Similarly, points obtained at current densities of 1.5×10^{-4} and 3.6×10^{-4} A/cm^2 were found to lie on the same curve, while experimental points obtained at 10^{-3} A/cm^2 no longer did so. Thus, pressures much less than 10^{-3} mm Hg and electron current densities not exceeding 5×10^{-4} A/cm^2 must be used to obtain the correct form of the excitation function. An investigation was also made of the excitation functions of the lines 5149/54, 5683/88 and 4979/83 Å. It was found that the excitation functions for lines belonging to

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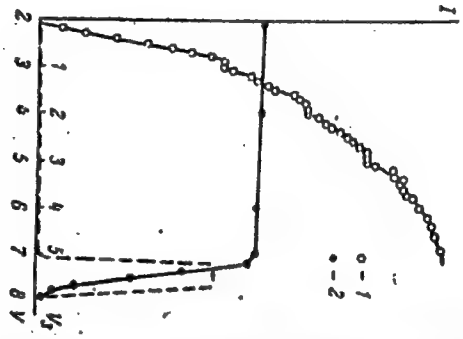
"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

A study of S/051/62/013/005/001/017
E032/E314

different series are of a different form. A fine structure was found for 5683/88 and 4979/83 Å. It is concluded that to obtain a correct explanation of the nature of the fine structure, similar measurements should be carried out with other alkali metals, using more mono-energetic electrons. There are 5 figures.

SUBMITTED: October 3, 1961

Fig. 2:



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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

Zapesochnyy, I. P.

ACCESSION NR: AP3004484 S/0048/63/027/008/0994/0995

AUTHOR: Sena, L. A.

TITLE: Second All-Union Conference on the Physics of Electron and Atom Collisions [Uzhgorod, 2—9 October 1962]

SOURCE: AN SSSR. Izvestiya, ser. fiz., v. 27, no. 8, 1963, 994-995

TOPIC TAGS: conference, electron collision, atom collision, collision physics

ABSTRACT: The II Vsesoyuznaya konferentsiya po fizike elektronnykh i atomnykh stolknoveniy (Second All-Union Conference on the Physics of Electron and Atoms Collisions), was held in Uzhgorod, 2—9 October 1962. The following reports were presented: "Theory of the charge-exchange process during atomic collisions," by Yu. N. Demkov; "Charge-exchange of multicharge ions," by I. P. Flaks; "Ionization due to atomic collisions," by N. V. Fedorenko; "Excitation of atoms and molecules due to electronic collisions," by I. P. Zapesochnyy; "Charge exchange and ionization during atomic collisions in the high-energy range," by V. S. Nikolayev; "Photoionization of gases and vapors by vacuum ultraviolet radiation," by Academician A. N. Terenin and F. I. Vilesov; "Effective cross sections of atomic collisions important in the theory of gaseous quantum generators," by I. I. Sobel'man; "Dissociation of molecules and ions during collisions of fast particles," by N. N. Tunitskiy; and "Corpuscular diagnostic of plasma," by V. V. Afrosimov.

ASSOCIATION: none

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L 18152-63 EWT(1)/FCC(w)/SDS/ES(w)-2 AFWTC/ASD/IJP(C)/SSD Pab-4

ACCESSION NR: AP3004494 S/0048/63/027/008/1033/1036

AUTHOR: Zapesochny*y, I.P.; Shpenik, O.B.

TITLE: New experimental technique for investigating excitation in electron-atom collisions /Report presented at the Second All-Union Conference on the Physics of Electronic and Atomic Collisions held in Uzhgorod 2-9 Oct 1962/

SOURCE: AN SSSR, Izvestiya, ser.fiz.,v.27, no.8, 1963, 1033-1036

TOPIC TAGS: electron-atom collision, excitation function, spectrum line, Hg, Zn

ABSTRACT: The appearance of structure in the spectrum line intensity versus exciting electron velocity curves has been demonstrated in a number of studies devoted to investigation of electron-atom collision cross sections. One of the authors (I. P.Zapesochny*y, Vestnik Leningrad un-ta, No.11, 67, 1954) showed that in the case of the 5461 Å line of Hg ($6^3P_2 7^3S_1$) fine structure appears and becomes more distinct when the energy homogeneity of the electron beam is brought to 3 eV and better. It is, however, impossible to obtain such monoenergetic electron beams by means of Hanle and similar tubes. Accordingly, the authors used a method of quasimonochromatization in which a series of anodes is mounted along the beam path; one of the anodes passes only electrons with an energy exceeding the potential at which this electron

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ACCESSION NR: AP3004494

is maintained. A diagram of the arrangement is shown in Fig.1 of the Enclosure. Anode A_1 pulls the electrons from the cathode K; anode A_2, maintained at a low negative potential relative to the cathode, stops all electrons with lower energy than the potential on it; anode A_3 accelerates the passed electrons. The collector C is maintained at the same potential as A_3. To obtain the optical excitation function at each value of the accelerating potential V_3 there is measured the difference in the electron current Δi and the increment in spectrum line intensity ΔI for two values of the retarding potential V_2. Then the $\Delta I/\Delta i$ versus V_3 curve will represent the optical excitation function due to electrons in the narrow energy interval defined by the two values of V_2. In practice, instead of using two values of V_2 the potential on A_2 was modulated, in effect modulating the electron beam. In this manner the excitation functions of the 5461 Å line of Hg and the 4811 Å line of Zn were obtained. The line intensities were measured by means of an ISP-51 spectrograph coupled to an FEU-18 photomultiplier. The curves exhibit a series of sharp peaks. "The authors are grateful to V.S.Shevere for assistance in the work." Orig. art. has: 4 figures.

ASSOCIATION: Kafedra optiki Fiziko-matematicheskogo fakulteta Uzhgorodskogo gos. universiteta (Chair of Optics, Physical-Mathematical Dept., Uzhgorod State Univ.)

SUBMITTED: 00 DATE ACQ: 26 Aug 63 ENCL: 01
SUB CODE: PH, SD NO REF SOV: 006 OTHER: 006

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L 18191-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD/JG
ACCESSION NR: AP3004495 S/0048/63/027/008/1037/1039

59
56

AUTHOR: Zapesochny*y, I.P.; Shimon, L.L.

TITLE: Excitation functions for some alkali metal atoms /Report presented at the Second All-Union Conference on the Physics of Electronic and Atomic Collisions held in Uzhgorod 2-9 Oct 1962/

SOURCE: AN SSSR, Izvestiya, ser.fiz.,v.27, no.8, 1963, 1037-1039

TOPIC TAGS: excitation function , electron impact, spectrum line , Na, Rb, Cs

ABSTRACT: Hitherto certain experimental difficulties have hindered systematic investigation of the excitation cross sections and functions of alkali metal atoms. The purpose of the present work was systematic investigation of excitation of sodium, rubidium and cesium by electron impact, using photoelectric recording of the weaker lines, since this is more sensitive than photographic recording. The experimental set-up has been described earlier (I.P.Zapesochny*y, Vestnik Leningrad unta.,No.11, 1954). The line radiation was detected by means of cooled photomultipliers. The vapor pressure interval and electron density were selected to minimize their distorting effects. Particular attention was given to insuring a monoenergetic beam; the energy straggling did not exceed 0.5-0.8 eV. Some of the results are

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 18151-63
ACCESSION NR: AP3004495

presented in Figs.1,2,3 and 4 (Enclosures). The excitation functions for the resonance (principal series) lines are similar (Fig.1) and have a broad peak. The sharp series excitation functions have sharp peaks and are also similar, except that the curve for Cs has an additional minor peak. The diffuse line series functions differ: the Na curve has a wide peak; Rb and Cs much narrower peaks. It also follows from the experimental results that the excitation functions for the components of a spectral doublet are virtually identical, even though different upper or lower levels may be involved. The excitation functions for rubidium were obtained in the present study for the first time. Orig.art.has: 4 figures.

ASSOCIATION: Kafedra optiki Fiziko-matematicheskogo fakul'teta Uzhgorodskogo gos. universiteta (Chair of Optics, Dept.of Physics & Mathematics, Uzhgorod State Univ.)

SUBMITTED: 00 DATE ACQ: 26Aug63 ENCL: 03

SUB CODE: PH NO REF SOV: 004 OTHER: 003

Card 2/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 18150-63 EWT(1)/FCC(w)/BDS AFFTC/ASD/IJP(C)

ACCESSION NR: AP3004496 S/0048/63/027/008/1040/1043

AUTHOR: Zapesochny*y, I.P.; Fel'tsan, P.V.

TITLE: New data on the excitation functions of inert gases /Report presented at the Second All-Union Conference on the Physics of Electronic and Atomic Collisions held at Uzhgorod, 2-9 Oct 1962/

SOURCE: AN SSSR, Izvestiya, ser.fiz.,v.27, no.8,1963, 1040-1043

TOPIC TAGS: excitation function , electron impact, spectrum line , He, Ne

ABSTRACT: Although there have been many studies of electron impact excitation of the spectrum lines of inert gases, reliable and consistent data for all the noble gases are still lacking. The present paper gives the results of experimental determination of the excitation functions of nine He I, one He II and three Ne lines in the visible, ultraviolet and near infrared regions. The experimental set-up and procedure were the same as in earlier studies (I.P.Zapesochny*y, Vestnik Leningrad un-ta, No.11, 67, 1954 and P.V.Fel'tsan and I.P.Zapesochny*y, Dokl.i soobshch. Uzhgorod.un-ta, No.3, 41, 1960). The line radiation was recorded by means of photomultipliers. The energy straggling of the electrons was 0.65-0.75 eV for 90% of

Card 1/2

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ACCESSION NR: AP3004496

the beam; the current density was 1 x 10 A/cm^2; the gas pressure 2 x 10^{-3} mm Hg. The results are presented in the form of excitation curves (line intensity in arbitrary units versus electron energy), and are summarized in a table. Many of the excitation functions were obtained for the first time in the present study. The excitation curves for singlet series of He differ to an appreciable extent, while the triplet series curves are similar; the curve for ionized helium (He II 4685 Å 3D-4F transition) is distinctive in character. Orig.art.has: 4 figures and 1 table.

ASSOCIATION: Kafedra optiki Fiziko-matematicheskogo fakul'teta Uzhgorodskogo gos. universiteta (Chair of Optics, Physics-Mathematics Dept., Uzhgorod State Univ.)

SUBMITTED: 00 DATE ACQ: 26Aug63 ENCL: 00

SUB CODE: PH NO REF SOV: 007 OTHER: 008

Card 2/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

[illegible]

TITLE: Monochromator for studying the optical properties of radiation in the vacuum ultraviolet

SOURCE: Uzhgorod. Universitet. Doklady i soobshcheniya. Seriya fiziko-matematicheskikh nauk, no. 4, 1961, [illegible]

TOPIC TAGS: monochromator, ultraviolet, optical instrument, vacuum ultraviolet, diffraction grating

ABSTRACT: The article describes the design and function of a monochromator for studying the optical properties of radiation in the vacuum ultraviole: region [illegible] grating [illegible] 1 mm, 600 lines/mm was used, the lines being [illegible] zat on. The optical layout of the monochromator, with 25 cm between the slits, permits the device to operate in an anticip ted range of 4500-800 Å. The reverse linear dispersion is almost constant and averages 16.3 Å/mm. The construction of [illegible] is shown in Fig. 1 of the Enclosure. The authors mention that [illegible] spectrum. The authors [illegible]

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 12774-65

ACCESSION NR: AT4046102

0

Engineer Ye. Ya. Falendyuk and the workers of the educational workshop of Uzhgorod [illegible] for their active role in the creation of the device." Orig. art.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ACCESSION NR: AP4046162

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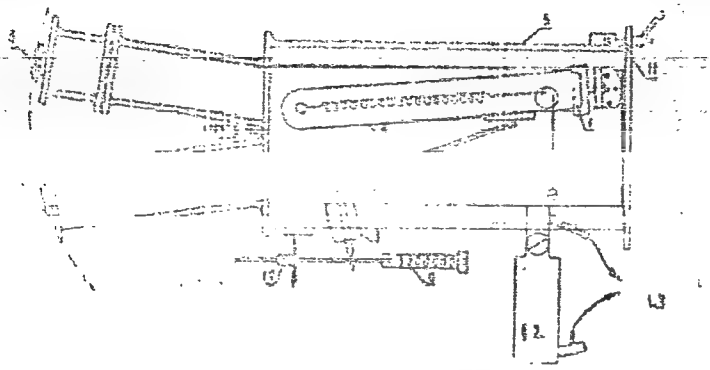

Fig. 1. Vacuum monochromator. 1 - lattice holder; 3 - entry slit; 4 - exit slit; 6 - lever; 7 - control lever; 8 - bellows; 9 - return spring; 10 - micrometer screw;

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPESOCHNYY, I.P. [Zapisochnyi, I.P.]; ZHUKOV, I.G. [Zhukov, I.H.]; GARGA, I.I. [Harha, I.I.]; YUKSTICH, V.S. [Yukstych, V.S.]

Apparatus with a vacuum monochromator for studying optical excitation functions. Ukr. Fiz. zhur. 9 no.2:196-206 F'64 (MIRA 17:7)

1. Uzhgorodskiy gosudarstvennyy universitet.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 10622-65 EWT(1)/EPF(b)-2 ASD(a)-5/AFWL/BSD/AEDC(b)/AS(mp)-2/SSD/

ACCESSION NR: AP4010193 S/3114/61/000/004/0045-005

AUTHOR: Shevera V. S.; Zapesochny*y, I. P.

TITLE: Photoelectric measurement of the properties of radiation from cadmium atoms in the ultraviolet region

SOURCE: Uzhgorod. Universitet. Doklady* i soobshcheniya. Seriya fiziko-

TOPIC TAGS: cadmium, spectroscopy, monochromator, radiation, photomultiplier, ultraviolet radiation, electron bombardment, betatron

ABSTRACT: The paper presents data from experiments in which the decomposition of the radiation from Cd atoms into a spectrum was accomplished by means of a monochromator

ponded to the line 3261 Å and 1.5 ev gave the lines of the diffusion series. Figures 1 and 2

Card 1/4

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 10622-65
ACCESSION NR: AT4046103

of the Enclosure show the results obtained. In general, the curves derived by means of the described photoelectric technique had more maxima than the corresponding results ob- [illegible] Orig. art. has 2 figures.

ASSOCIATION: Uzhgorodskiy gosuniversitet (Uzhgorod State University)

NO REF SOV: 002 OTHER: 001

Card 3/4

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 10522-65

ACCESSION NR: AT4046103

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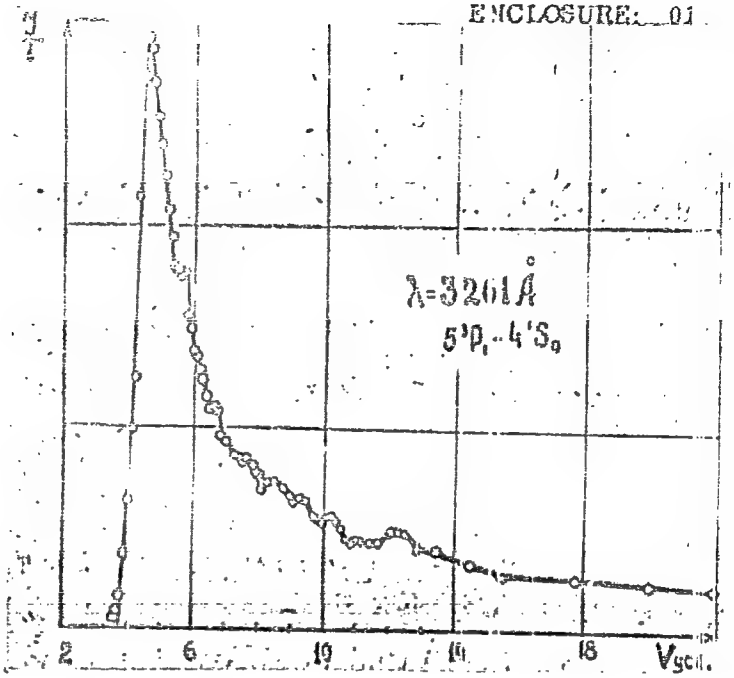

Fig. 1. Dependence of the intensity of radiation of 3261 Å on the speed of the oscillatory electrons

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L 10622-65

ACCESSION NR: AT4046103

ENCLOSURE: 02

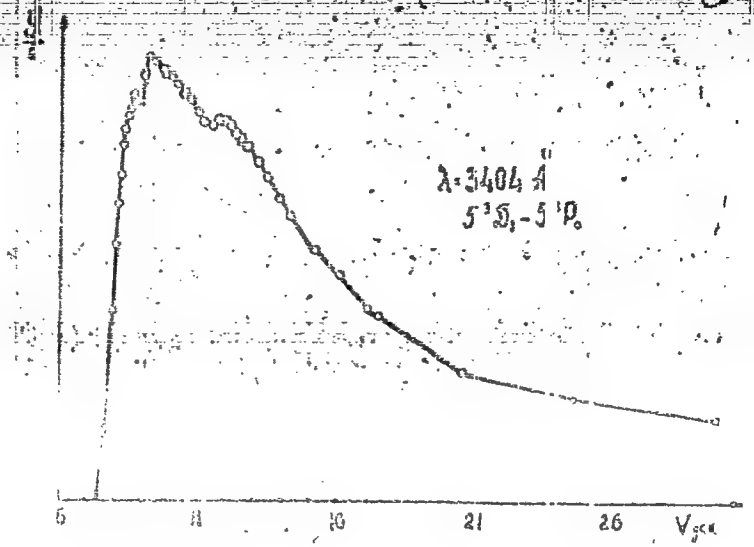

Fig. 2. Dependence of the intensity of radiation of 3404 Å on the speed of the excitatory electrons

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPESOCHNYY, I.P. [Zapisochnyi, I.P.]; SHIMON, L.L. [Shymon, L.L.]

Effective excitation cross sections of reconance levels of sodium. Ukr. fiz. zhur. 9 no.10:1143-1145 O '64 (MIRA 18:1)

1. Uzhgorodskiy gosudarstvennyy universitet.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

BR

ACCESSION NR: AP4039699 S/0051/64/016/006/0929/0935

AUTHORS: Zapesochnyĭ, I. P.; Shimon, L. L.

TITLE: Excitation functions of cesium spectral lines

SOURCE: Optika i spektroskopiya, v. 16, no. 6, 1964, 929-935

TOPIC TAGS: cesium, spectral analysis, spectrum line, excitation spectrum, line spectrum, doublet splitting

ABSTRACT: The excitation functions of 25 lines belonging to the principal, sharp, diffuse, and fundamental series of the cesium atom were investigated by means of a setup essentially similar to that described by the authors earlier (Vestn. LGU, no. 11, 67, 1954 and Naukovi zapysky UzhDU, no. 39, 49, 1962), using photoelectric recording of the weak intensities. The tests were made at low vapor pressure and at low density of the exciting monokinetic electrons. The excitation functions of each investigated line were measured

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ACCESSION NR: AP4039699

several times with several different variants of tube and electrode configurations. The beam of exciting electrons was perpendicular to the entrance slit of the monochromator in some tests and parallel in others, the results being practically the same, so that only data with perpendicular orientation are reported. The laws governing the behavior of the excitation functions of the lines in each series are established. Secondary maxima were obtained for the excitation functions of resonance lines. No difference was observed in the behavior of the excitation functions of the doublet components. Some peculiarities in the excitation functions of the fundamental series suggest that cascade transitions from the F levels to the lower D levels and then to the resonance P levels of cesium may cause an anomalous behavior of the excitation functions of the resonance doublet. Orig. art. has: 5 figures and 1 table.

ASSOCIATION: None

Card 2/6

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ACCESSION NR: AP4039699

SUBMITTED: 18Apr63 DATE ACQ: 24Jun64 ENCL: 03

SUB CODE: OP NR REF SOV: 006 OTHER: 002

Card 3/6

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ACCESSION NR: AP4039699

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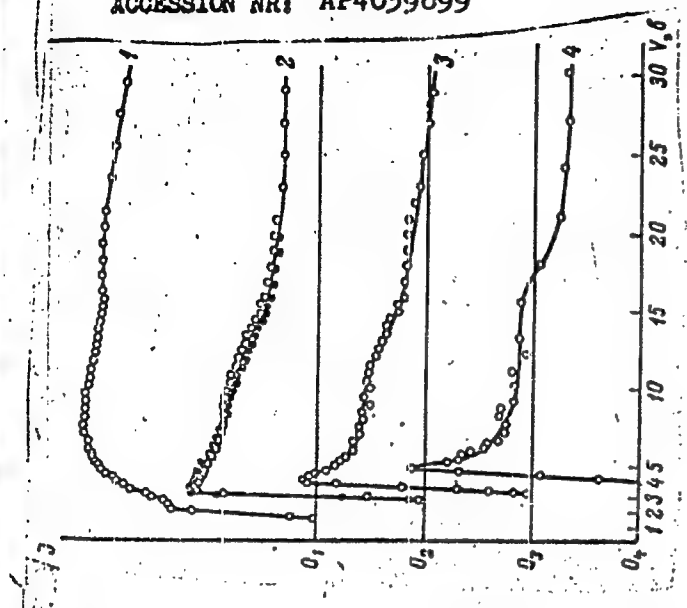

Excitation functions of spectral lines of principal series.

1 - 8521 Å; 2 - 4555 and 4593 Å (black circles); 3 - 3876 Å; 4 - 3611 Å.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ACCESSION NR: AP4039699

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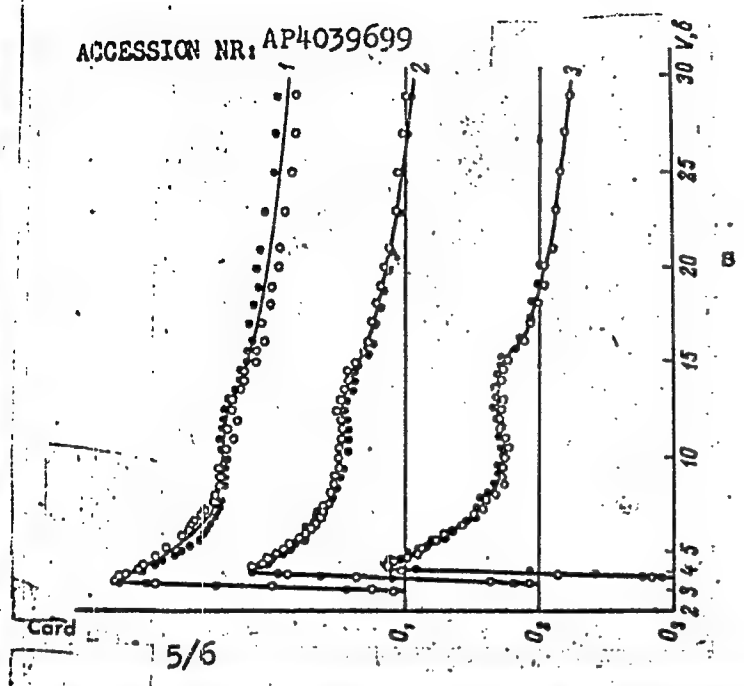

Excitation functions of spectral lines of sharp series.

1 - 7609 (black circles) and 7944 Å; 2 - 6354 Å (black circles) and 6586 Å; 3 - 5568 (black circles) and 5746 Å.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ACCESSION NR: AP4039699

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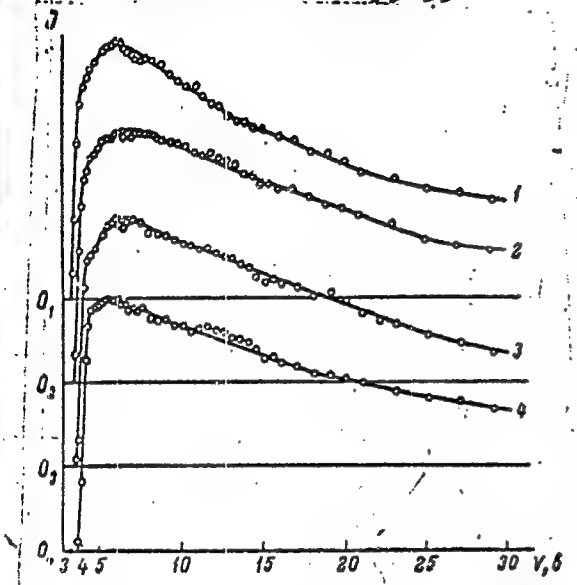

Excitation function of spectral lines of the fundamental series.

1 — 8115—8070 Å; 2 — 7228—7270 Å; 3 — 6621—6670 Å; 4 — 6431—6472 Å.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 9194-66 EWT(1)/EWT(m)/EWP(b)/EWP(t) IJP(c) JD/JG

ACC NR: AR6000112 SOURCE CODE: UR/0058/65/000/008/D023/D023

SOURCE: Ref. zh. Fizika, Abs. 8D181

68

AUTHORS: Zapesochnyy, I. P.; Shevera, V. S.

B

ORG: none

TITLE: Effective cross section for excitation of the spectral lines of zinc, cadmium, and mercury

CITED SOURCE: Tr. Komis. po spektroskopii. AN SSSR, t. 2, vyp. 1, 1964, 167-174

TOPIC TAGS: zinc, cadmium, mercury, spectral line, excitation cross section, light excitation, pressure effect

TRANSLATION: Absolute data are obtained on the effective cross sections for the excitation of the spectral lines of atoms of zinc, cadmium, and mercury in the visible region. The variation of the excitation functions with electron energy, up to 30 volts, was investigated at pressures 1×10^{-3}--2.3×10^{-3} mm Hg and exciting electron beam densities 4×10^{-4}--1×10^{-3} a/cm^2. The absolute values were determined by photoelectric comparison of the intensity of beam radiation with a standard source -- a band lamp. The values of the corss sections at the maxima of the excitation functions of the triplet and singlet lines are of the order of 10^{-17}--10^{-18} cm^2.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 000/ OTH REF: 000

Card 1/1

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 9195-66 EWT(1)/EWT(m)/EWP(b)/EWP(t) IJP(c) JD/JG

ACC NR: AR6000113 SOURCE CODE: UR/0058/65/000/008/D023/D023

SOURCE: Ref. zh. Fizika, Abs. 8D182

AUTHORS: Zapesochnyy, I. P.; Shimon, L. L.

ORG: none

TITLE: Excitation function of spectral lines of rubidium and cesium

CITED SOURCE: Tr. Komis. po spektroskopii. AN SSSR. M., t. 2, vyp. 1, 1964, 175-179

TOPIC TAGS: rubidium, cesium, light excitation, spectral line, excitation cross section

TRANSLATION: The electron-impact method and photoelectric registration are used to study the excitation functions of 25 spectral lines of Cs and 15 lines of Rb, belonging to the principal, secondary, and fundamental series. There is no great difference in the behavior of the excitation functions of the lines of the principal and secondary series which are characterized by a sharp growth of the effective cross section of excitation and the presence of a sharp maximum at a distance of approximately 1 volt beyond their excitation potential. The excitation function of the fundamental series is characterized by rounded maxima which lie several volts beyond the excitation potentials. The excitation functions of the resonant lines have an anomalously broad maximum (relative to the other lines). A fine structure was observed from the rising part of the curves.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 000/ OTH REF: 000

Card 1/1 ads

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPESOCHNYY, I.P.; FEL'TSAN, P.V.

Effective excitation cross sections for the first few helium lines. Opt. i spektr. 18 no.5:911-913 My '65.

(MIRA 18:10)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 14621-66 EWT(1)/EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JG/AT
ACC NR: AP5025290 SOURCE CODE: UR/0051/65/019/004/0480/0486

AUTHOR: Zapesochnyy, I. P.; Shimon, L. L.

ORG: none

56
B

TITLE: Effective excitation cross sections of alkali metal atoms in collisions with slow electrons. Part 1: Sodium

21,44,55
27

SOURCE: Optika i spektroskopiya, v. 19, no. 4, 1965, 480-486

TOPIC TAGS: sodium, excitation cross section, electron collision, spectral line

21,44,55

ABSTRACT: The authors' laboratory has undertaken systematic studies aimed at determining the excitation cross sections of spectral lines of alkali metal atoms. The article gives results of experiments on sodium vapor, carried out under conditions of single collisions and a linear dependence of line intensities on vapor pressure and on the current density of the beam electrons. The vapor pressure did not exceed 4.5×10^{-4} mm Hg, and the electron current density was not more than 4.7×10^{-4} A/cm^2. The excitation cross sections of 19 doublets of the principal and subordinate series of the sodium atom, and also 10 ionic lines. A regular pattern was established in the behavior of the cross sections of lines of subordinate series relative to the principal quantum number of the upper level. The role of certain

Card 1/2 UDC: 539.186.2:546.33

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 14621-66
ACC NR: AP5025290

cascade transitions, cross sections of resonance levels, and various levels of the principal and sharp series is evaluated. Orig. art. has: 6 figures, 2 tables, and 2 formulas.

SUB CODE: 07, 20 / SUBM DATE: 10Jul64 / ORIG REF: 011 / OTH REF: 005

Card 2/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 13006-66 EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JG
ACC NR: AP6001635 SOURCE CODE: UR/0051/65/019/006/0864/0870

AUTHOR: Zapesochnyy, I. P.; Shimon, L. L.; Soshnikov, A. K.

ORG: none

40
27 B

TITLE: Effective excitation cross sections for atoms of alkali metals during collisions with slow electrons. II. Potassium

SOURCE: Optika i spektroskopiya, v. 19, no. 6, 1965, 864-870

TOPIC TAGS: excitation cross section, potassium, alkali metal, ~~atomic physics~~, resonance line, electron

ABSTRACT: The slow-electron excitation cross sections for 28 lines in the principal and subordinate series of the potassium atom were experimentally measured. The spectral lines were photoelectrically recorded using the most nearly monoenergetic electron beam possible at low current densities. The experimental conditions are described. Control experiments confirmed the linearity of the relationship between intensities for all lines up to vapor pressures and beam currents greater than those used for the measurements. Curves are given for the excitation cross section on the

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L 13006-66
ACC NR: AP6001635

resonance line at 765 Å, as well as for the components of the second doublet in the principal series at 4044 and 4047 Å. Absolute functions are given for excitation of lines in the principal, sharp and diffuse series. Curves are given showing the excitation cross sections for the lines as a function of the principal quantum number. The results are used for evaluating the part played by successive transitions. It is found that the contribution made by successive transitions to S-levels (starting at n=7) is small. However, the contribution of successive transitions for the lower 6S level is about 15%. These transitions play an extremely important part at the 5S level. Successive transitions are responsible for approximately twice the fraction of the population at this level caused by direct excitation by electrons from the normal state of the atom. The contribution made by successive transitions to D-levels from the levels of the principal series, as well as from F-levels, is small (less than 10%) with the exception of the 3D-level (which is the final level for all lines of the fundamental series). It was impossible to evaluate the cross sections for D-levels due to lack of data for lines of the fundamental series. Orig. art. has: 6 figures, 1 table.

SUB CODE: 20/ SUBM DATE: 28Sep64/ ORIG REF: 009/ OTH REF: 000

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Card 2/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 14103-66 EWT(1)/EWT(m)/EWP(t)/EWP(b) IJP(c) JD/WW/JG/GG/AT

ACC NR: AP6004089 SOURCE CODE: UR/0020/66/166/002/0320/0323

AUTHOR: Zapesochnyy, I. P.; Shimon, L. L.

ORG: Uzhgorod State University (Uzhgorodskiy gosudarstvennyy universitet)

64
B

TITLE: Effective cross sections for excitation of resonance doublets in cesium and rubidium

SOURCE: AN SSSR. Doklady, v. 166, no. 2, 1966, 320-323

TOPIC TAGS: cesium, rubidium, excitation cross section, resonance line

ABSTRACT: The authors describe a method for studying the effective cross sections of resonance lines in atoms and determine the absolute cross sections for excitation of resonance doublets in cesium and rubidium by slow electrons. The proposed method is based on the law for damping of monochromatic radiation

$$I_\nu = I_{\nu 0} e^{-\varkappa_\nu l}, \quad (1)$$

where I_ν is the intensity of the undamped luminous flux; $I_{\nu 0}$ is the intensity of the luminous flux after passing through a distance l in the absorbent gas; $\varkappa_\nu = \sigma_\nu n_0$

Card 1/2

UDC: 539.106.2:546.33

has: 4 figures

SUB CODE: 20/ SUBM DATE: 20May65/

Card 2/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPESOCHNYY, I.P. [Zapisochnyi, I.P.]; FEL'TSAN, P.V.

Excitation of inert gases in electron-atom collisions. Part 1. Helium. Ukr. fiz. zhur. 10 no. 11:1197-1208 N '65.

1. Uzhgorodskiy gosudarstvennyy universitet. (MIRA 18:12)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 36438-66 EWT(1) IJP(c) AT

ACC NR: AP6015418 SOURCE CODE: UR/0051/66/020/005/0753/0759

AUTHOR: Zapesochnyy, I. P.; Shimon, L. L.

ORG: none

TITLE: Effective excitation cross sections of alkali metal atoms in collisions with slow electrons. Part 4: Cesium

SOURCE: Optika i spektroskopiya, v. 20, no. 5, 1966, 753-759

TOPIC TAGS: excitation cross section, cesium, electron collision, atomic spectrum, resonance line

ABSTRACT: The excitation cross sections of 43 lines of the principal, subordinate, and fundamental series of the cesium atom and also 17 ionic lines were determined experimentally at vapor pressures $p = 2 \times 10^{-4}$ and 6×10^{-4} mm Hg and an electron density $j < 10^{-4}$ A/cm^2 (corresponding electron-beam intensity $i = 22$ μA). In the principal series, the second and fifth doublets were measured directly, and a rough estimate of the cross sections of resonance lines was made. From these data, conclusions were drawn concerning the relative intensities within the doublets. In the subordinate and fundamental series, the monotonic decrease of the cross sections of the lines permits one to correlate the cross sections with the principal quantum number of the upper level. The role of cascade transitions in the various levels of the atom is

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L 36438-66

ACC NR: AP6015418

discussed, and the cross sections of certain levels are given. Orig. art. has: 7 figures, 2 tables, and 1 formula.

SUB CODE: 07/ SUBM DATE: 29Jan65/ ORIG REF: 006/ OTH REF: 001

Card 2/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 01312-67 EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) RDW/AT/JD

ACC NR: AP6018435 SOURCE CODE: UR/0051/66/020/006/0944/0949

AUTHOR: Zapesochnyy, I. P.; Shimon, L. L.

ORG: none

45
B

TITLE: Effective excitation cross sections of alkali metals in collisions with slow electrons

SOURCE: Optika i spektroskopiya, v. 20, no. 6, 1966, 944-949

TOPIC TAGS: excitation cross section, rubidium, resonance line, alkali metal, electron collision

ABSTRACT: The cross sections of all lines of the subordinate series as well as of the lines of the principal series starting with the third term were measured at vapor pressures of $2 \cdot 10^{-4}$ and $6 \cdot 10^{-4}$ mm Hg. The electron current density in the interval was $(5-8) \cdot 10^{-4}$ amp/cm^2. The absolute cross sections were determined at an electron energy level of 9.5 ev; the relation between the excitation cross sections and electron speed was plotted on the basis of relative excitation functions of previously obtained lines. To eliminate possible system errors, the absolute measurements were performed with several coils of different geometry, at different vapor pressures, at different temperatures (1673 and 1873°K) of the ribbon-filament lamps, and with different combinations of light filters. The scattering of individual measurements was ~10%; the error

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 01312-67

ACC NR: AP6018435

inherent in the method was ~30-35%. The excitation cross sections of 31 lines of the principal and subordinate series of the Rb atom, as well as of 15 ionic lines were determined experimentally. In addition, the apparent cross sections of the resonance lines of Rb were estimated at a vapor pressure of $5.7 \cdot 10^{-6}$ mm Hg. The apparent section of the resonance doublet was estimated at $3.82 \cdot 10^{-15}$ cm^2. The role of the successive transitions in the settling of the excited levels could not be conclusively determined. Preliminary calculations indicate that the contribution of the successive transitions to the S-levels is insignificant; on the $7S$ level it amounts to 7-8%. At the $6S$ level it appears to reach 20-25%. At peak excitation, the following cross section values for several levels were obtained: $Q_{7S}=34 \cdot 10^{-18}$, $Q_{8S}=10 \cdot 10^{-18}$, $Q_{9S}=3.6 \cdot 10^{-18}$, and $Q_{10S}=2.4 \cdot 10^{-18}$ cm^2. Orig. art. has: 5 figures, 2 tables.

SUB CODE: 20/ SUBM DATE: 07Dec64/ ORIG REF: 005

Card 2/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 04761-67 EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) AT/JD/JG

ACC NR: AP6025973 SOURCE CODE: UR/0051/66/021/001/0131/0133

AUTHOR: Aleksakhin, I. S.; Zapesochnyy, I. P.

ORG: none

76
75
B

TITLE: Excitation functions of lithium spectral lines

SOURCE: Optika i spektroskopiya, v. 21, no. 1, 1966, 131-133

TOPIC TAGS: lithium, excitation cross section, electron interaction, particle collision, electron collision, collision cross section, spectroscopy, electron beam

ABSTRACT: The authors investigated the excitation cross section for electron collisions with lithium atoms. Earlier work in this direction was not successful. In the experiment, a metal chamber was constructed in which an electron beam and a lithium beam were intersected. The emissions resulting from the electron-atom collisions were measured through a sapphire window. The results of the experiments were plotted and three graphs are included in the paper. The following conclusions can be made on the basis of these data: 1) the curves show a pronounced maximum which occurs a few electron-volts beyond the upper level threshold; 2) the difference in the sharpness of the maxima for the excitation functions in the abrupt and the diffused series observed in the other base metals is also valid for lithium; 3) as opposed to other base metals (Na, K, Rb, Cs) the excitation function of the resonant doublet of lithium does not

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ACC NR: AP6025973

exhibit a broad flat maximum. In conclusion the authors expressed their gratitude to S. S. Mayerchik for assisting with the measurements. Orig. art. has: 3 figures.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 04763-67 EWT(1)/EWT(m)/T/EWP(t)/ETI IJP(c) AT/JD

ACC NR: AP6025976 SOURCE CODE: UR/0051/66/021/001/0140/0141

AUTHOR: Zapesochnyy, I. P.; Skubenich, V. V.

ORG: none

45
44
B

TITLE: On excitation cross section levels of molecular nitrogen due to electron collisions

SOURCE: Optika i spektroskopiya, v. 21, no. 1, 1966, 140-141

TOPIC TAGS: excitation cross section, excitation energy, excited electron state, molecular physics, molecular theory, nitrogen

ABSTRACT: The authors report on the experiments designed to determine the absolute excitation cross section levels for a series of important molecular nitrogen states. The excitation of nitrogen was due to the collisions with slow electrons. The intensity of radiation due to the various molecular systems of N_2 was compared to a reference light source. Based on the experimental data the authors conclude that: 1) the maximum excitation cross sections for the molecular nitrogen are in the order of 10^{-16} to 10^{-17} cm^2, thus exceeding several times the cross sections for the low levels of helium atoms; 2) the levels of the neutral N_2 molecule are most effectively excited by an electron beam of 10 to 20 ev. A two-fold increase in beam energy reduces the excitation of this level by an order of magnitude. Conversely, the level N_2^+ has a

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L 04763-67

ACC NR: AP6025976

maximum excitation probability for a broad range of electron energies of 30 to 100 ev; and 3) since the second excitation maximum of $B^3\Pi_g$ coincides with the excitation maximum for $C^3\Pi_u$, it is obvious that this maximum is due to the cascade transition $C^3\Pi_u \rightarrow B^3\Pi_g$. All secondary phenomena, the cascade transitions, were neglected during the measurements. The authors expressed their gratitude to L. M. Biberman for his interest in this work. Orig. art. has: 1 figure.

SUB CODE: 20/ SUBM DATE: 08Dec65/ ORIG REF: 003/ OTH REF: 002

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Card 2/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 02997-67 EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) JD/GW

ACC NR: AP6033165 SOURCE CODE: UR/0033/66/043/005/0954/0962

40
B

AUTHOR: Zapesochnyy, I. P.

ORG: Uzhgorod State University (Uzhgorodskiy gos. universitet)

TITLE: Absolute excitation cross sections of helium levels by low-energy electrons

SOURCE: Astronomicheskiy zhurnal, v. 43, no. 5, 1966, 954-962

TOPIC TAGS: excitation cross section, helium energy level, energy level, metastable level, low energy electron, HELIUM, ELECTRON ENERGY LEVEL

ABSTRACT: New data are obtained on the cross sections for excitation of helium atoms by slow electrons. It is found that the excitation of the majority of helium levels is characterized by two maxima, one of which occurs directly at the threshold. The behavior of the excitation cross sections of the levels used as a basis for determining the absolute excitation cross sections for the resonance and both metastable levels in the region of electron energies between the threshold and 120—160 ev. The agreement with theory of the absolute excitation functions of the 2^1S, 2^3S, and 2^3P levels is satisfactory. Complete data on the cross sections of helium levels at maximum excitation, ($\delta > 10^{-20}$ cm^2,) are given. Orig. art. has: 3 figures, 3 tables, and 9 formulas.

SUB CODE: 20 / SUBM DATE: 17Sep65/ ORIG REF: 012/ OTH REF: 015/ ATD PRESS: 5099

Card 1/1 awm UDC: 523.037

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 06250-67 EWT(m)/EWP(t)/ETI IJP(c) JD/GG/AT

ACC NR: AP6031952 SOURCE CODE: UR/0051/66/021/003/0261/0266

AUTHOR: Zapesochnyy, I. P.; Shimon, L. L.

ORG: none

TITLE: Effective excitation cross sections of alkali metals in collisions with slow electrons

SOURCE: Optika i spektroskopiya, v. 21, no. 3, 1966, 261-266

TOPIC TAGS: excitation cross section, resonance line, cesium, potassium, rubidium

ABSTRACT: A method is proposed for determining the absolute excitation cross sections of the resonance lines of atoms. It is known that the attenuation of a flux of monochromatic radiation obeys the law

$$I_\nu = I_{\nu 0} e^{-\chi_\nu l}, \qquad (1)$$

or

$$\ln I_\nu = \ln I_{\nu 0} - \chi_\nu l \qquad (2)$$

where $I_{\nu 0}$ is the intensity of the unattenuated light flux; I_ν is the intensity of the light flux which has covered a distance l in the absorbing gas, and χ_ν is the attenuation factor. In a graphical representation, the intersection of straight line (2) with the vertical axis ($\ln I_\nu$) gives the desired value of the unattenuated flux $I_{\nu 0}$

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ACC NR: AP7001545 SOURCE CODE: UR/0020/66/171/003/0559/0561

AUTHOR: Zapesochnyy, I. P.

ORG: Uzhgorod State University (Uzhgorodskiy gosudarstvennyy universitet)

TITLE: Laws governing the cross sections for electron-impact excitation of the lower levels of helium

SOURCE: AN SSSR. Doklady, v. 171, no. 3, 1966, 559-561

TOPIC TAGS: helium, electron interaction, excitation cross section, nuclear energy level

ABSTRACT: In view of the lack of data on the absolute excitation cross sections of the most significant helium energy levels, the author presents some results of systematic investigations on the excitation of helium atoms by collision with slow electrons. Direct measurements were made of the excitation cross sections of 32 lines in the spectral interval 2900 - 11000 Å and in the electron energy range 150 - 250 ev. The absolute cross sections were then determined for between 4 and 7 of the lower S, P, and D levels of para- and orthohelium, using a formula deduced for this purpose and data on the polarization of the spectral lines of the helium. The results are summarized in a table. They show that the energy dependence of most levels is characterized by two maxima, and that the excitation cross sections exhibit a regular behavior that can

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ACC NR: AP7001545

be expressed by the formula $Q_k(E) = Cn^{-\alpha}$, where Q is the excitation cross section, E the energy, n the principal quantum number of the level, C a constant, and α an integer exponent.. Orig. art. has: 2 figures, 5 formulas, and 1 table.

SUB CODE: 20/ SUBM DATE: 09Feb66/ ORIG REF: 004/ OTH REF: 003
ATD PRESS: 5113

Card 2/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

SHPENIK, O.B.; SHEVERA, V.S.; ZAPESOCHNYY, I.P., dotsent

Measurement of optical excitation functions by the method of quasi-monochromatization of an electron beam. Dokl. i soob. UzhGU. Ser. fiz.-mat. i ist. nauk no.5:49-52 '62. (MIRA 17:9)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

FEL'TSAN, P.V.; ZAPESOCHNYY, I.P.; SKUBENICH, V.V.

Further study of the excitation functions of helium. Dokl. i soob. UzhGU. Ser. fiz.-mat. i ist. nauk no.5:38-40 '62. (MIRA 17:9)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPESOCHNYY, I.P., dotsent; SHEVERA, V.S.

Excitation functions of subordinate series of cadmium and mercury. Dokl. i soob. UzhGU. Ser. fiz.-mat. i ist. nauk no.5:43-44 '62. (MIRA 17:9)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

SHIMON, L.L.; ZAPESOCHNYY, I.P., dotsent

Excitation functions of certain cesium lines. Dokl. i soob. UzhGU. Ser. fiz.-mat. i ist. nauk no.5:44-46 '62.

(MIRA 17:9)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPESOCHNYY, I.P.; FEL'TSAN, P.V.

Recent data on the excitation functions of inert gases. Izv. AN SSSR. Ser. fiz. 27 no.8:1040-1043 Ag '63. (MIRA 16:10)

1. Kafedra optiki Fiziko-matematicheskogo fakul'teta Uzhgorodskogo gosudarstvennogo universiteta.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPESOCHNYY, I.P.; SHPENIK, O.B.

Resonance character of the excitation of mercury atoms in collisions with slow electrons. Dokl. AN SSSR 160 no.5: 1053-1056 F '65. (MIRA 18:2)

1. Uzhgorodskiy gosudarstvennyy universitet. Submitted October 8, 1964.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 27202-66 EWT(m) JD

ACC NR: AP6011578 SOURCE CODE: UR/0051/66/020/003/0521/0522

AUTHORS: Zapesochnyy, I. P.; Fel'tsan, P. V.

ORG: none

TITLE: On the excitation cross sections of the 2p-levels of argon, krypton, and xenon

SOURCE: Optika i spektroskopiya, v. 20, no. 3, 1966, 521-522

TOPIC TAGS: argon, krypton, xenon, excitation cross section, optic transition, spectral line, cascade, optic method, spectrographic camera/ ISP-51 spectrographic camera

ABSTRACT: The authors used an optical method, involving photoelectric registration of the radiation, to measure the absolute excitation functions of almost all the spectral lines that begin with the 2p-levels of Ar, Kr, and Xe, and also of several lines corresponding to the cascade transitions to these levels. Altogether 99 lines were investigated (50 in argon, 20 in krypton, and 29 in xenon), located in the spectral interval 4500 -- 9950 Å. The experimental conditions were such that all secondary processes except cascade transitions could be neglected. A spectrograph (ISP-51) with long-focus camera and a special exit slit was used as a monochromator, and the standard source was a tungsten ribbon

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ACC NR: AP6011578

lamp SI8-200U. The maximum error in the absolute measurement was the usual 35%. A table of the effective excitation cross sections of all ten 2p-levels of argon as a function of the energy of the exciting electrons is presented. A table listing the cross sections at the maximum excitation of the 2p-levels of argon, krypton, and xenon, and plots of several excitation functions are given. The results show that on going to heavier atoms, the half-width of the maximum of the excitation function decreases and the peak moves closer to the excitation threshold of the level. It is concluded that the effective excitation cross sections at the maximum lie in the range 4×10^{-17} -- 8×10^{-19} cm^2, the maximum excitation efficiency lying in the interval from threshold to double the threshold for xenon and to triple the threshold for argon and krypton. Orig. art. has: 2 figures and 1 table.

SUB CODE: 20/ SUBM DATE: 31Aug65/

Card 2/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 32626-66 EWT(1) IJP(c) AT

ACC NR: AP6014027 SOURCE CODE: UR/0056/66/050/004/0890/0896

51
50
B

AUTHOR: Zapesochnyy, I. P.; Shpenik, O. B.

ORG: Uzhgorod State University (Uzhgorodskiy gosudarstvenny universitet)

TITLE: Excitation of atoms by beams of monoenergetic electrons

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 4, 1966, 890-896

TOPIC TAGS: excited state, electron bombardment, electron energy, excitation cross section, diatomic molecule, spectral line, DIATOMIC MOLECULE, ATOM, ELECTRON BEAM

ABSTRACT: The purpose of the investigation was to develop an apparatus for the production of highly monoenergetic electron beams and to investigate the effective cross section for the excitation of atoms and diatomic molecules by electron impact, near the threshold of the reaction. The apparatus used for the measurements consisted of an excitation tube, an optical system, and a photoelectric attachment. The most important part was an electron monochromator based on the principle of deflection of the electrons in the field of a cylindrical condenser. The monoenergetic electron beam (with an energy scatter half width 0.05 - 0.1 ev) was produced by a 127°-cylindrical electrostatic selector. Careful measurements were made of the excitation functions of the resonant and other spectral lines of He, Zn, Cd, Hg, Na, and K. In all measurements the concentrations of the electrons and atoms were very low to ensure the production of only single collisions. The most important result was the ob-

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ACC NR: AP6014027

servation of a large number of well-resolved maxima of excitation of the lines near the threshold, something that could not be observed in earlier experiments because the beam was not sufficiently monoenergetic. The resonant character of the excitation of certain energy levels is confirmed by the results. The positions of the maxima for the different levels of the different atoms are tabulated and some considerations are advanced with regard to their origin. It is demonstrated that the interaction between the atom and the electron can give rise to three competing intermediate processes (positive ion, excited Beutler level, negative ion), which were previously observed in experiments, but it is still impossible to determine which of the processes plays the decisive role. It is also concluded that the optical method described here provides more information than the electric method, in that it gives data not only on the initial levels but also on a large number of higher levels of the given atom. The authors thank Professor V. M. Dukel'skiy for continuous interest in the work. Orig. art. has: 5 figures and 1 table.

SUB CODE: 20/ SUBM DATE: 02Nov65/ ORIG REF: 005/ OTH REF: 006

Card 2/2

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPESOCHNYY, I.P.; SHIMON, L.L.

Excitation functions of the spectral lines of cesium.
Opt. i spektr. 16 no.6:929-935 Je '64. (MIRA 17:9)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPESOCHNYY, I.P.; SHEVERA, V.S.

Fine structure of the optical excitation functions of Zn, Cd, and Hg atoms. Izv. AN SSSR. Ser. fiz. 27 no.8:1044-1048 Ag '63. (MIRA 16:10)

1. Kafedra optiki Fiziko-matematicheskogo fakul'teta Uzhgorodskogo gosudarstvennogo universiteta.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPESOCHNYY, I.P.; SHIMON, L.L.

Excitation functions of atoms of certain alkali metals. Izv. AN SSSR. Ser. fiz. 27 no.8:1037-1039 Ag '63. (MIRA 16:10)

1. Kafedra optiki Fiziko-matematicheskogo fakul'teta Uzhgorodskogo gosudarstvennogo universiteta.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ASSOCIATION: None

SUBMITTED: 25Jun64 ENCL: 00 SUB CODE: GP

NR REF SOV: 003 OTHER: 003

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L 56558-65

ACCESSION NR: AP5007558

[illegible] excitation potentials corresponding to the [illegible]

[illegible] results indicate that besides the direct excitation by the electrons

[illegible]

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

L 41313-66 EWT(m)/EWP(t)/ETI IJP(c) JH/JW/JD

ACC NR: AP6019632 (A,N) SOURCE CODE: UR/0048/66/030/002/0349/0358

AUTHOR: Dolbilkin, B.S.; Zapevalov, V.A.; Korin, V.I.; Lazareva, L.Ye.; Nikolayev, F.A.

ORG: Physics Institute im. P.N.Lebedev of the Academy of Sciences of the SSSR (Fizicheskiy institut Akademii nauk SSSR)

61 58 B

TITLE: Gamma ray absorption cross sections of F-19, Mg-24, and Ca-40 in the 10 to 30 MeV energy region /Report, Fifteenth Annual Conference on Nuclear Spectroscopy and Nuclear Structure, held at Minsk, 25 January to 2 February 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 2, 1966, 349-358

TOPIC TAGS: gamma ray absorption, gamma spectrometer, absorption spectrum, fluorine, magnesium, calcium

ABSTRACT: An electron-positron pair type γ-ray spectrometer with an energy resolution of 220 keV at 20 MeV has been employed to measure the absorption cross sections of F^{19}, Mg^{24}, and Ca^{40} for 10 to 30 MeV γ rays in the bremsstrahlung beam from a 260 MeV synchrotron. As absorbers there were employed a 138.6 g/cm^2 block of commercial teflon (the absorption due to carbon was eliminated with the aid of measurements with a 33.3 g/cm^2 graphite absorber), a 112.4 g/cm^2 block of 99.9% pure metallic magnesium, and a 70.84 g/cm^2 block of 99% pure metallic calcium, kept in an oil bath. The measured absorption cross sections were corrected for non-nuclear absorption due to

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L 42313-66

ACC NR: AP6019632

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pair production and the Compton effect by techniques described in detail elsewhere by N.A.Burgov and the authors (Zh. eksperim. i. teor. fiz., 48 70 (1962); 45, 1693 (1963)). The nuclear absorption cross sections are presented graphically, are compared with the data and calculations of numerous experimenters and theoreticians, and are discussed at length. The γ-ray absorption cross sections of F^{19}, Mg^{24}, and Ca^{40}, integrated over the investigated energy range, were 335, 365, and 930 mb MeV, respectively. The integrated cross sections of F^{19} and Ca^{40} agree, within the experimental error, with the values given by the dipole sum rule, but the measured integrated cross section of Mg^{24} is only 72% of the sum rule value, although there are theoretical calculations indicating that substantially all the dipole transitions in Mg^{24} should lie below 30 MeV. Further theoretical work is required. The authors thank N.S.Kozhevnikov for assistance with the measurements, P.A.Cherenkov for the opportunity to use the 260 MeV synchrotron, and B.A.Tulupov for valuable discussions. Orig. art. has: 2 formulas, 5 figures, and 6 tables.

SUB CODE: 20 SUBM DATE: 00 ORIG. REF: 008 OTH REF: 021

Card 2/2 hs

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

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BURKATSKAYA, Galina Yevgen'yevna, dvazhdy Geroy Sotsialisticheskogo Truda; ZAPIVAKHIN, A., red.

[On the way to a steep upsurge in the economy] Po puti krutogo pod"ema khoziaistva. Moskva, Kolos, 1964. 86 p. (MIRA 18:6)

1. Predsedatel' kolkhoza "Radyans'ka Ukraina" Cherkasskoy oblasti (for Buratskaya).

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

BASTECKY, J.; LAURENTOVA, J.; ZAPLATILKOVA, H.

Rapid method for determining guaiacuran in the urine. Activ. nerv. sup. 5 no.2:223-224 My '63.

1. Psychiatricka klinika fakulty vseobecneho lekarstvi KU, Praha.

(GUAIACOL GLYCERYL ETHER) (URINE)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPLETAL, Robert, Inz.

Activities of the section for plant production of the Czechoslovak Academy of Agricultural Sciences. Vestnik CSAZV 7 no.12:649-751 '60.
(Czechoslovakia--Plants) (EEAI 10:4)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

CICHA, I.; MOLCIKOVA, V.; ZAPLETALOVA, I.

Microbiostratigraphy of the Tertiary in the Nova Vieska-1 key borehole. Prace Ust naft 22 no.99:32-55 '64.

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPETAYEVA, L. P.

185T96

USSR/Metals - Steel, Structure Feb 51

"Effect of Calcium on Crystallization and Surface Tension of Austenitic Nickel-Chromium Steel," L. P. Zapetayeva, N. S. Kreshchanovskiy, Cand Tech Sci, L. L. Kunin, Engr, TsNIITMASh

"Litey Proiz" No 2, pp 26-28

Studied modifying effect of various amts of Ca, up to 1.5%, on surface tension and primary crystn of steel Kh15N25. Describes app and procedure for measuring surface tension. Established addn of 0.5% Ca as optimum for good macrostructure with finest grain, when zone of columnar crystn is entirely eliminated.

185T96

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PROCESSES AND PROPERTIES INDEX

Ca

7

A rational analysis of lead compounds in lead and in polymetallic oxidized ores, and in their concentrates. S. M. Anisimov and G. G. Zapevalov. *Sbornik Trudov Tsentral. Nauch.-Issledovatel. Lab. Zavoda "Elektrotsink"* 1937, 233-67; *Khim. Referat. Zhur.* 1, No. 8-9, 128-9 (1938); cf. *C. A.* 29, 4683.—The analysis is based on the finding of solvents for the sepn. of $PbSO_4$, $PbCO_3$, $Pb_5Cl(PO_4)_3$, PbS, $PbCrO_4$, $Pb_5(VO_4)_3Cl$. Treat the mixt. of minerals with 25% NaCl soln. (the soln. contains $PbSO_4$ and 0.4-0.7% of $PbCO_3$). Treat the residue with 200 times as much of 15% $CH_3CO_2NH_4$ soln. (the soln. contains $PbCO_3$, 0.3% of $Pb_5Cl(PO_4)_3$, and 0.05% of PbS). Treat the new residue with 2% NaOH (the soln. contains $PbCrO_4$, and 0.3-0.4% of $Pb_5Cl(PO_4)_3$). Again treat the residue with a mixt. of 25% NaCl + 0.5% HCl (the soln. contains $Pb_5Cl(PO_4)_3$, $Pb_5(VO_4)_3Cl$ and possibly up to 6% of PbS). V in the soln. is detd. by titrating by the usual method. Then treat the residue with 250 times as much of a mixt. of 25% NaCl + $FeCl_3$ (60 g./L.), and ext. PbS by shaking for 12 hrs. The impurities of Ca, Sr and Ba change the results of $PbSO_4$ extn. due to the formation of double salts with Pb. During the analysis of the concentrates, obtained by flotation, the ores are covered with a PbS film. Such errors can be ignored since the amt. of PbS is increased very little, and its film does not hinder the reactions with the solns.

W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

BC

B-I-7

Rational analysis of lead compounds in oxide and semi-sulphide lead ores. S. M. Antonov and G. G. Lisovalov (Tsvet. Metal., 1934, No. 10, 100—118).—Anglesite dissolves selectively in 25% aq. NaCl. Cerussite dissolves readily in neutral 15% NH_4OAc; the solubility is selective in presence of $Pb_5(PO_4)_3Cl$ and PbS_4, but not for $PbSO_4$. Pyromorphite is readily sol. in dilute acidified cold aq. NaCl. Galenite is somewhat sol. in aq. NaCl acidified with HCl or H_2SO_4. A method of mineral analysis based on these solubility differences is described. Cu Ana. (c)

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

B-1-4

Elimination of antimony in the flame refining of crude copper. G. G. ZAPEVALOV and A. D. POGORELOV (Tsvet. Met., 1931, 493—494).—Keeping melted Cu under an oil flame for 5 hr. does not remove Cu. Ans. Sb.

COMMON ELEMENTS

OPEN

MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND LETTER

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2ND AND 4TH ORDERS

MATERIALS INDEX

1ST ORDER

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

CA

Elimination of antimony in the process of flame refining of crude copper. G. G. ZAPEVALOV AND A. D. POGORELOV. *Tsvetnie Metal.* 1931, 493-4.—In order to remove Sb, found in crude Cu to the extent of 1%, which is in excess of the permissible amt., expts were carried out to remove the Sb by an addnl. refining. The method consisted in melting the refined Cu in a reverberatory furnace and keeping the bath under an oil flame for a total period of 5 hrs. Hardly any Sb was removed in this treatment; the amt. remaining was about 0.006%, while a content of 0.004 is required. It is recommended to melt crude Cu with a purer grade to get a product within the limit of Sb content. S. L. MADORSKY

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

Rational analysis of lead compounds in oxide and semi-sulfide lead ores. S. M. Antonov and G. G. Zapevalov. *Tsvetnye Metal.* **1934**, No. 10, 100-18. Anglesite dissolves selectively in a 25% NaCl soln. Cerussite dissolves readily in a neutral 15% soln. of NH_4OAc and soly. is selective in the presence of $Pb_5(PO_4)_3Cl$ and PbS, but not in $PbSO_4$. In the latter case the mineral should first be treated with a 25% soln. of NaCl. Pyromorphite is readily sol. in a slightly acidified cold soln. of NaCl. Galenite is sol. to some extent in solns. of NaCl acidified with HCl or H_2SO_4. A method of mineral analysis based on the above solubilities of the individual minerals is described in detail.

S. L. Madorsky

A5A-5L4 METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPEVALOV, G.G.; VYGODA, R.M.; Prinimal uchastiye LIVINSKIY, D.Ya., inzh.

Leaching of complex metal mattes in acid and ferric chloride solutions. Trudy IPI no.18:92-99 '63. (MIRA 17:6)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

VYGODA, R.M.; ZAPEVALOV, G.G.; TRAVNIKOVA, L.B.

Direct hydrometallurgical processing of Transbaikalia oxidized lead ores. Trudy IPI no.18:100-111 '63. (MIRA 17:6)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

BRAGIN, B.K.; VASIL'YEV, L.M.; ZAPEVALOV, N.A.

Low inertia tubular furnace for testing platinum-rhodium platinum thermocouples. Izm. tekh. no.12:19-20 D '64.

(MIRA 18:4)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1"

"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

ZAPEVALOV, N.P.

ZAPEVALOV, N.P.; KOTON, M.M.

Synthesis and polymerization of methoxy-substituted (in the ring) styrenes. Part 2: Synthesis and polymerization of dimethoxystyrenes. Zhur. ob. khim. 27 no.8:2142-2145 Ag '57. (MIRA 10:9)

1. Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR.
(Veratrole) (Styrene)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

POLOZOV, V.F.; ZAPEVALOV, N.V.; SOTNIKOV, M.A.; KOLODIN, E.A.; KOMORIN, A.D.

Breaking down kerosine in momentary intermittent electric arcs.
Trudy VNIIT no.13:45-65 '64. (MIRA 18:2)

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"APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963810011-1

37791
S/120/62/000/002/015/047
E039/E520

21,6000

AUTHORS: Zapevalov, V.A. and Leykin, Ye.M.

TITLE: A coincidence circuit of the chronotron type

PERIODICAL: Pribory i tekhnika eksperimenta, no.2, 1962, 64-65

TEXT: By using the chronotron principle a 2-channel coincidence circuit with high resolution and efficiency has been developed. Negative pulses from two photomultipliers are fed through phase inverters into lines with a delay of $3.3 \cdot 10^{-9}$ sec per section and simultaneously into the usual fast coincidence circuit with a resolving time $\tau \approx 2 \cdot 10^{-8}$ sec. Each section of fast delay line is connected with a corresponding double coincidence circuit constructed on a 6Ж2П (6Zh2P) tube with control on the first and third grids. A cascade amplifier is used with an anode load mixer delay line having a delay of $3 \cdot 10^{-7}$ sec between cascades. The operation of the circuit is described and diagrams are given showing (1) the pulse shape after mixing and (2) the shape of the input and output pulses of the integrator for different time displacements depending on the time of arrival of pulses at the inputs. The apparatus was tested using a ФЭУ-36

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A coincidence circuit of the ... S/120/62/000/002/015/047
E039/E520

(FEU-36) with a liquid scintillator (terphenyl in toluene) and a Co^{60} γ-source. There are 2 figures.

ASSOCIATION: Fizicheskiy institut AN SSSR (Physics Institute AS USSR)

SUBMITTED: July 20, 1961

Card 2/2

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